

EXHIBIT 5

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CLEARCORRECT OPERATING, LLC,

Petitioner,

v.

ALIGN TECHNOLOGY, INC.,

Patent Owner.

Case IPR2017-01829

Patent No. 8,038,444

DECLARATION OF DR. JAMES MAH, D.D.S., M.Sc., D.M.Sc.

I, Dr. James Mah, D.D.S., M.Sc., D.M.Sc., declare as follows:

I. INTRODUCTION

1. I am over the age of eighteen (18) and otherwise competent to make this Declaration.

A. Engagement

2. I have been retained on behalf of ClearCorrect Operating, LLC (“ClearCorrect”) to review and to provide my opinion on the scope and content of “prior art” predating the application for U.S. Patent No. 8,038,444 (“the ’444 patent”) and regarding the subject matter recited in the claims of the ’444 patent. I understand that this Declaration relates to a petition for the above-captioned *inter partes* review (IPR) of the ’444 patent.

B. Background and Qualifications

3. A detailed description of my professional qualifications, including a listing of my specialties/expertise and professional activities, is contained in my curriculum vitae, a copy of which is attached as Appendix A.

4. I currently serve as the Program Director in Orthodontics at the University of Nevada, Las Vegas, Nevada (UNLV). In addition, I am the Director of Orthodontic Research at UNLV and a Professor in Residence of Clinical Sciences at UNLV.

5. Prior to my tenure at UNLV, I served as the Director of the Redmond Imaging Center at the Herman Ostrow School of Dentistry of the University of Southern California, Los Angeles, California (USC). While in tenure at USC, I also served as Director of the Craniofacial Virtual Reality Laboratory, and as an Associate Clinical Professor in the Division of Craniofacial Sciences and Therapeutics.

6. Further, I have over 20 years additional prior experience as both an instructor and researcher in Orthopaedics, Orthodontics, Pedodontics and Oral Biology at Harvard School of Dental Medicine, Boston, Massachusetts and the University of Alberta, Edmonton, Alberta.

7. I concurrently serve as the Chief Technical Officer of ClearCorrect, Round Rock, Texas. I hold non-equity interests in the form of un-exercised Warrants and Stock Appreciation Rights in ClearCorrect. No aspect of my compensation or relationship with ClearCorrect is dependent upon the content of the opinions expressed herein. Likewise, no aspect of my compensation is dependent upon the outcome of this proceeding.

8. I received my Master of Science, Certificate in Orthodontics, and Doctor of Dental Surgery training at the University of Alberta, Edmonton, Canada in the 1980's-early 1990's. Further, in 1995 I received a Doctorate of Medical Science from Harvard Medical School, in Boston, Massachusetts. One year later I

completed Postdoctoral Orthopaedic Research at Children's Hospital, Boston, Massachusetts.

9. I hold Board Certification and/or Licensure in the following:

- Specialty Certification: Diplomate of the American Board of Orthodontists, 2005, 2011
- State Licensure: Nevada, California
- National Licensure: American Dental Association National Dental Board Certificate
- National Dental Examination Boards (Canada)

10. I am currently active in the following Professional Organizations:

- 2006-present: Institute for Corrective Jaw Surgery, Santa Barbara, CA
- 2006-present: American Dental Association
- 1996-present: European Orthodontic Society
- 1996-present: World Federation of Orthodontists
- 1995-present: Harvard Society for the Advancement of Orthodontics
- 1989-present: American Association of Orthodontists
- 1989-present: Pacific Coast Society of Orthodontists

11. I currently serve on the Editorial Advisory Board of "Orthodontic Products"

Magazine and as a scientific reviewer for many journals. In addition I serve/have served on numerous professional Committees and Boards including:

- 2003-2006: Scientific Advisory Committee, 2nd International Conference on Advanced Digital Technology in Head and Neck Reconstruction: Future Directions
- 2000-2005: Board of Directors of Conferences on Orthodontic Advances in Science and Technology (COAST)
- 1997-2005: Board of Directors of Biological Mechanisms of Tooth Movement Conferences
- 2012-2013: UNLV Endodontic Faculty Search Committee
- 2012-2015: UNLV Pediatric Dental Faculty Search Committee
- 2012-2013: UNLV SDM Branding Committee

101. Finally, claim 6 of the ‘444 patent recites “*adding the number of movement stages to the number of non-movement stages for each dental object to determine a minimum number of stages for each respective dental object; and selecting the largest of the minimum number of stages.*”

102. Chishti ‘876 describes that tooth movements are tracked in an array:

In one embodiment, movement information for about fifty discrete stages is specified. Each stage represents a single aligner, which is expected to be replaced about every two weeks. Thus, each stage represents about a two-week period. In one embodiment, a two-dimensional array is used to track specific movements for each tooth at a specific period of time. One dimension of this array relates to teeth identification, while the second dimension relates to the time periods or stages.⁹⁰

103. As discussed previously, Chishti ‘876 describes that the stages of movement for each tooth may include movements and non-movements in certain situations (e.g., an “A-type” movement pattern). Therefore, because the array tracks the movement of the individual teeth over the various stages, the movement and non-movement stages would necessarily be added together in the array of each individual tooth.

104. One of ordinary skill in the art would understand that the sum of the number of movement stages and non-movement stages of the respective tooth is a “minimum” number of stages involved for each tooth. As explained by Chishti

⁹⁰ Ex. 1004, 11:34-43.

‘876, treatment paths are generally designed to “require only the minimum amount of movement.”⁹¹ Similarly, Chishti ‘511 describes that “tooth paths are optimized in the aggregate so that the teeth are moved in the quickest fashion with the least amount of round-tripping.”⁹² Unwarranted movements may damage the patient’s tooth or cause unnecessary discomfort to the patient, and therefore are to be avoided or balanced with their need (e.g., in the case of round-tripping). Thus by adding together the movement and non-movement stages, which have been calculated to avoid unnecessary movement, a “minimum” number of stages is determined.

105. Moreover, in order to determine the number of stages of the entire orthodontic treatment plan for a patient—and therefore be able to determine the number of aligner appliances to fabricate for that patient—one of ordinary skill in the art would further have necessarily selected the largest of the minimum number of stages of tooth movements as the optimal number of stages. In other words, the “largest” of the minimum number of stages simply represents the minimum number of stages required for all teeth to reach their final goal in the treatment plan. This number would necessarily be used as the “optimal” number because (a) including any additional unneeded stages would not involve any tooth movements and would not make any sense, and (b) using a smaller number of stages would

⁹¹ Ex. 1004, 3:63-4:7.

⁹² Ex. 1005, 4:7-22.

omit at least one movement stage of one of the teeth and would result in an incomplete orthodontic treatment plan.

106. Accordingly, Chishti '876 and Chishti '511, considered alone or in combination, disclose each of the limitations of claim 6 as discussed above.

110. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of the Title 18 of the United States Code and that such willful false statements may jeopardize the results of these proceedings.

Executed on: July 20, 2017



Dr. James Mah, D.D.S., M.Sc., D.M.Sc.